

Notice of Allowability	Application No.	Applicant(s)	
	10/583,381	VARPULA ET AL.	
	Examiner	Art Unit	
	Benjamin M. Baldrige	2831	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to telephone interview, 25 November 2007.
2. ☒ The allowed claim(s) is/are 23 - 25, 33, 44 - 58.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>20091125</u>. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|---|--|

/Benjamin M Baldrige/
Examiner, Art Unit 2831

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given by email from Eric J. Franklin, Reg. No. 37,134 on 26 November 2009 at 8:50 AM.

The application has been amended as follows:

The claims are amended as follows:

23. A sensor arrangement remotely readable by a separate reader utilizing radio frequencies for determining desired quantities from sources, the arrangement comprising:

an LC resonator comprising a capacitor and a coil,

an electrically conductive ring,

a sensor element coupled to the LC resonator, whose properties change as a function of a measurable quantity, the sensor element being coupled inductively with the LC resonator without forming a direct galvanic contact, wherein the sensor element is arranged inside the electrically conductive ring and is thinner than the electrically conductive ring, and

a package containing foodstuffs or medicinal substances, wherein the sensor element is arranged inside the package and the coil is arranged outside the package,

wherein the coil is configured to generate a magnetic field on a location of the sensor element, and wherein the sensor element directly affects the the magnetic field generated by the coil.

44. An apparatus for indicating a deterioration event, said apparatus comprising:

a sensor element capable of reacting with a compound generated by the deterioration event, or capable of reacting with oxygen,

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an LC resonator comprising a capacitor and a coil, wherein said coil is arranged to induce eddy currents in said sensor element by an alternating magnetic field generated by said coil, said eddy currents induce a voltage in said coil such that said voltage is dependent on electrical conductivity and thickness of said sensor element, and

an electrically conductive ring having a thickness greater than the sensor element, wherein said sensor element is disposed inside the electrically conductive ring.

45. The apparatus according to claim 44, wherein said sensor element is sensitive to hydrogen ~~sulphide~~ sulfide.

51. A method for indicating a deterioration event by using a sensor element and an LC resonator, said LC resonator comprising a capacitor and coil, said method comprising:

arranging the sensor element inside a package containing a perishable product, said sensor element being capable of reacting with a compound generated by deterioration of said perishable product, or capable of reacting with oxygen,

generating an alternating magnetic field by said coil, inducing eddy currents in said sensor element by said alternating magnetic field, and

inducing a voltage in said coil by said eddy currents, wherein said voltage depends on an electrical conductivity and a thickness of said sensor element, and wherein said sensor element is arranged inside an electrically conductive ring that is thicker than said sensor element.

52. The method according to claim 51, wherein said sensor element is sensitive to hydrogen ~~sulphide~~ sulfide.

54. The method according to claim 53, further comprising:
determining a distance between said sensor element and said coil based on the measured changes in the resonance frequency of said coil.

59 – 61 (Cancelled)

2. The following is an examiner's statement of reasons for allowance:

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Smolander et al. (US Application US 2007/0176773 A1) discloses an RFID spoilage sensor for packaged food and drugs, including a remotely readable sensor for indication of usability condition of perishable products such as foodstuffs and medical drugs. The sensor incorporates an element responsive to the condition of the perishable product. According to the invention, the sensor is placed inside the foodstuff package. This sensor is remotely readable, and incorporates a resonant circuit responsive to decay in a food or drug product, but does not include a conductive ring structure surrounding the active sensor element.

Gershenfeld et al. (US Patent 6,025,725) discloses electrically active resonant structures for wireless monitoring and control, in which a planar electromagnetic resonator utilizes an electromagnetically active material located between the capacitive or inductive elements of the resonator. A microscopic electrical property of this material is altered by an external condition, and that alteration, in turn, affects the behavior of the resonator in a consistent and predictable manner.

Latham et al. (US Application US 2003/0226900 A1) discloses electronic tags that include electronic circuitry incorporating a microprocessor, a non-volatile memory associated with the microprocessor such that the microprocessor can write data to the non-volatile memory, a sensing transducer connected to the microprocessor, and an interface for interrogation of the non-volatile memory, the sensing transducer, being such as to output an electrical signal in response to an event of a pre-selected type, the microprocessor being programmed to log signals from the sensing transducer) to the

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non-volatile memory to produce a record of the selected event and being arranged to be powered by the electrical output signal from the sensing transducer.

Morris et al. (US Application US 2004/0115319 A1) discloses a food-borne pathogen and spoilage detection device and method that includes a gas-permeable sensor housing positionable within an interior of food packaging. A pH indicator is positioned within the housing for detecting a change in a gaseous bacterial metabolite concentration that is indicative of bacterial growth, wherein a pH change is effected by a presence of the metabolite. The housing and the pH indicator are preferably safe for human consumption. A method for detecting bacteria in a perishable food product includes supporting a food product by a food packaging element and positioning a gas-permeable sensor housing within an interior of the food packaging element, the sensor including a pH indicator. The food product and the housing are sealed within the food packaging, and the pH indicator is monitored for a bacterial concentration in the food product in excess of a predetermined level.

Williams et al. (US Application US 2005/0153052 A1) discloses a food and beverage quality sensor, including a detection material having an inherent sensitivity to a contaminant and changing a property in response thereto. The detection material is subjected to a modulating agent to alter the sensitivity of the detection material, so that exposure of the detection material to the contaminant causes the property to change in response to a level corresponding to the altered detection sensitivity.

Alocilja et al. (US Application US 2002/0119513 A1) discloses a method and apparatus for the detection of volatile products in a sample, in which a transducer is used, which

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changes voltage as a function of contact of the volatile products with the transducer to produce a gas signature of the volatile products and a spectrophotometer to analyze the volatile products to produce a spectral footprint of the volatile products. The apparatus and method are used to detect spoilage of a biological material, such as a food. The apparatus is also used to detect microorganisms and by comparing the gas signature and spectral footprint to a library of gas signatures and spectral footprints, the apparatus enables identification of the microorganisms and in particular identification of pathogenic microorganisms.

Horiuchi et al. (US Application US 2004/0063215 A1) discloses a sulfur component sensor and sulfur component detector, including a member formed of a material which is stable to hydrogen sulfide, and having a contacting side which is brought into contact with hydrogen sulfide, and a measuring member located on the contacting side of the former member, the measuring member being formed of a material which reacts with hydrogen sulfide to yield a reaction product having an increased electrical resistance value and/or making a phase change into a phase easily scattered by the gas stream at a temperature of the vicinity of the contacting side, and allowing an integrated amount of hydrogen sulfide passed over the sensor to be measured by measuring its electrical resistance value. A sulfur-detecting device using the detecting sensor is also disclosed. However, as to claim 23, the prior art of record fails to teach or suggest, singly or in combination, a sensor arrangement remotely readable by a separate reader utilizing radio frequencies for determining desired quantities from sources, including

the sensor element is arranged inside the electrically conductive ring and is thinner than the electrically conductive ring

in combination with the other limitations of independent claim 23.

Claims 24 – 25, definite and enabled by the specification, are also allowed due to their dependence on independent claim 23.

As to claim 44, the prior art of record fails to teach or suggest, singly or in combination, an apparatus for indicating a deterioration event, including

an electrically conductive ring having a thickness greater than the sensor element, wherein said sensor element is disposed inside the electrically conductive ring

in combination with the other limitations of independent claim 44.

Claims 45 - 50, definite and enabled by the specification, are also allowed due to their dependence on independent claim 44.

As to claim 51 the prior art of record fails to teach or suggest, singly or in combination, a method for indicating a deterioration event by using a sensor element and an LC resonator, said LC resonator comprising a capacitor and coil, including

said voltage depends on an electrical conductivity and a thickness of said sensor element, and wherein said sensor element is arranged inside an electrically conductive ring that is thicker than said sensor element

in combination with the other limitations of independent claim 51.

Claims 52 - 58, definite and enabled by the specification, are also allowed due to their dependence on independent claim 51.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany

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the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin M. Baldrige whose telephone number is 571 270 1476. The examiner can normally be reached on Monday through Friday 7:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571 272 2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Benjamin M Baldrige/
Examiner, Art Unit 2831

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/Timothy J. Dole/

Primary Examiner, Art Unit 2831